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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,161	10/26/2001	Simon Dodd	10110412	9553

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EXAMINER

LATTIN, CHRISTOPHER W

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/055,161	DODD ET AL.	
	Examiner	Art Unit	
	Christopher W Lattin	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 03 March 2003.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 14-20 and 23-35 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 14-20, 23-30 and 32-35 is/are rejected.

7) ☒ Claim(s) 31 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>11</u> .	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al. (U.S. Patent 5,322,811).

Komuro et al. teach a method of forming a gate oxide insulating layer on the surface of an SOI substrate, which includes a first semiconductor region separated from a second semiconductor region by an insulator area, forming a gate electrode on the gate oxide, etching at least the gate oxide insulating layer on the surface, doping the surface exposed by the etching, forming an interlayer insulator and forming a tantalum layer 108. See especially Figures 13 and 14, column 17 lines 50-65 and column 19.

Claims 19, 20, 29-31 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Gardner et al. (U.S. Patent 5,998,288).

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Gardner et al. teach a method of forming at least one conductive layer 30 comprising a doped region in a substrate, growing a gate oxide 20/22 to electrically isolate a first portion of the conductive layer (e.g. 25) from a second portion (e.g. 26) and further processing the conducting layers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komuro et al., applied supra, in view of Kubota et al. (U.S. Patent 6,474,780).

Komuro et al. are applied supra and teach all of the limitations of the invention, but fail to teach etching the substrate using TMAH. Kubota et al. teach a step of using TMAH as an effective etchant to penetrate the substrate. It would have been obvious to one skilled in the art at the time of the invention to use TMAH in order to effectively penetrate the substrate surface.

Claim 23-27, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (U.S. Patent 6,474,780) in view of Gardner et al. (U.S. Patent 5,998,288).

Kubota et al. teach a method of forming at least one conductive layer comprising a doped region in a substrate, growing a field oxide to electrically isolate a first portion of the conductive layer (e.g. 35) from a second portion (e.g. 37) and depositing a tantalum cavitation layer over the field oxide layer and both portions, and depositing a polycrystalline silicon layer over the field oxide layer, but fails to teach etching a trough in the first portion of the conductive layer. Gardner et al. teach a method of etching trough in a substrate and forming an insulator within the trench to reduce the effective depth of the source and drains. It would have been obvious to one skilled in the art at the time of the invention to etch a trough in a substrate and form an insulator within the trench as taught by Gardner et al. in order to reduce the effective depth of the source and drains and thereby increase the speed of the device.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komuro et al., applied supra, in view of Gardner et al. (U.S. Patent 5,998,288).

Komoru et al., are applied supra to claim 14 and teach all of the limitations of Claim 28, but fail to teach that the unbroken insulator area is disposed above and within the semiconductor die. Gardner et al. teach a method of forming an insulator within a trench on top of a substrate to reduce the effective depth of the source and drains. It would have been obvious to one skilled in the art at the time of the invention to form an insulator within a trench and on top of a substrate as taught by Gardner et al. in order to reduce the effective depth of the source and drains and thereby increase the speed of the device.

Allowable Subject Matter

Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fails to adequately anticipate or obviate either singularly or in combination with another reference the process of Claim 31 further comprising forming a slot in the trough, the slot extending through the semiconductor die.

Response to Arguments

Applicant's arguments filed 03/03/03 have been fully considered, but are not persuasive with respect to claims 14 and 18. Applicant's arguments with respect to claims 19,20 and 23-27 have been considered but are moot in view of the new ground(s) of rejection necessitated by the amendment.

Applicant argues that Komuro does not disclose at least the following limitations of Claims 14-17: "wherein said surface comprises a doped semiconductor area separated from a second doped semiconductor area by an unbroken insulator area disposed above the semiconductor die." The transistor shown in Figure 14 clearly shows doped region 53 separated from doped region 51 by the length of unbroken insulator layer 57 disposed above the semiconductor die. This separation is necessarily the result of forming the source and drain regions using the insulator layer as a mask.

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Applicant also argues that neither Komuro nor Kubota, alone or in combination disclose, teach or suggest at least the following limitations of Claim 18: "wherein said surface comprises a doped semiconductor area separated from a second doped semiconductor area by an unbroken insulator area disposed above the semiconductor die." Again it is noted that both references disclose a transistor wherein the source and drain are separated by an insulator disposed between them.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Lattin whose telephone number is (703) 305-3017. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached at (703) 308-3325. The fax numbers for this Group are (703) 872-9318 for responses to non-final actions and (703) 872-9319 responses to final actions.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

CWL 
May 16, 2003


John F. Niebling
Supervisory Patent Examiner
Technology Center 2800